The EPP and Subject Extraction

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Abstract: This paper aims to account for that-t effects in terms of the EPP requirement under Chomsky’s (2008) probe-goal system, thereby supporting the position that the EPP should incorporate a condition required by the PF interface. The account makes crucial use of the mechanism of parallel operations proposed by Chomsky (2008) as well as Fox and Pesetsky’s (2005) mechanism of linear ordering. It is further demonstrated that suspension of that-t effects occurs when the EPP is satisfied by not a wh-subject moving out of the that-clause complement but rather other material such as expletives, adverbs and rich morphology on T.

Keywords: EPP, that-t effects, probe-goal, cyclic linearization, adverb effects

Recently, it has been claimed by Holmberg (2000) and Landau (2007), among others, that the EPP is in fact a condition imposed by the PF interface. This paper aims to support a position along this line by examining the interaction between the version of the EPP so conceived and subject extraction by A’-movement. In particular, I demonstrate that given this conception of the EPP, so-called that-trace effects, illustrated in (1), receive a natural explanation under the recent minimalist setting, in particular, the probe-goal system invented by Chomsky (2008).

(1) a. *Who do you think that left?
   b. Who do you think left?

Alexiadou and Anagnostopoulou (1998) and Hasegawa (2005) characterize the EPP as something like the following:

(2) The EPP feature of T must be morpho-phonologically materialized.

There are at least two ways for T to be materialized: either it manifests itself with rich
agreement morphology or its specifier is occupied by an *overt* phrase. The former way of materialization allows a null subject to appear in Spec-TP (or simply a subject not to exist) in so-called pro-drop languages, since these languages exhibit rich morphology on verbs, hence T is materialized in this way. In those languages that do not have such a rich agreement manifestation, on the other hand, the latter way of materialization is mandatory. Thus, in English, overt material must appear in Spec-TP to satisfy the EPP in question.

It has been rather common to claim that satisfaction of the EPP-feature or something akin to it is responsible for *that*-t effects, as witnessed by such works as Rizzi (2006), Rizzi and Shlonsky (2007), and Mizuguchi (2008), among others. Following this line of pursuit, this paper provides a new analysis of *that*-t effects in terms of the EPP given in (2) under the following two theoretical settings: (i) Chomsky’s (2008) mechanism of parallel probing and (ii) Fox and Pesetsky’s (2005) Order Preservation Condition.

This paper is organized as follows: Section 1 outlines theoretical backgrounds that play crucial roles in explaining *that*-t effects. Section 2 provides an account of *that*-t effects in terms that are assumed in the previous section. Section 3 discusses some consequences of the account of *that*-t effects presented in Section 2. Section 4 concludes with a summary and speculations on some remaining question.

1 Theoretical Backgrounds

1.1 On Phases: Chomsky (2008)

One of the important claims made by Chomsky (2008) that enhance further development of the minimalist program is expressed by him as follows:

(3) Along with Transfer, all other operations will also apply at the phase level, as determined by the label/probe. 

(Chomsky 2008, p. 143)
Given the assumption that phases are CP and vP, and crucially not TP, a question immediately arises as to how the φ-features of T are checked under the probe-goal system. Chomsky’s answer to this is to assume the operation called feature inheritance. Thus, when a derivation reaches a phase head C, φ and Tense features are inherited from the C to the T just below it. Apart from a theory-internal reason for why feature inheritance needs to take place,¹ this mechanism gives rise to a nice consequence for the formation of chains. To show this point, let us consider how a sentence such as (4) is derived.

(4) Who saw John?

Under the usual assumptions, who is base-generated in Spec-vP as the external argument of see, then moves to Spec-TP to satisfy the EPP-feature and finally reaches Spec-CP to satisfy whatever feature is responsible for wh-movement (I follow Chomsky (2007, 2008) in assuming that the relevant feature is an edge-feature, abbreviated as [EF].), as shown below:

(5) [CP whoi C[EF] [TP whoj T[φ][EPP] [vP whok see John]]]

This derivation produces a heterogeneous chain that contains both the A-chain (whoj, whok) and the A’-chain (whoi, whoj). Under Chomsky’s (2008) new mechanism, on the other hand, the derivation of (4) proceeds as follows:

(6) a. C[EF][φ][EPP] [TP T[ ] [vP who see John]]

b. C[EF] [TP T[φ][EPP] [vP who see John]]

c. [CP whoi C[EF] [TP whoj T[φ][EPP] [vP whok see John]]]

When the derivation reaches the C phase, as in (6a), the φ-features as well as the EPP-feature are inherited from C to T, as shown in (6b).² Chomsky claims that from this stage of derivation, all the relevant operations occur simultaneously: probing by T for its φ-features, finding who in Spec-vP as its goal, establishing an Agree relation, pied-piping who to its Spec-TP to satisfy the EPP-feature, and also moving who in
Spec-νP to Spec-CP to satisfy the edge-feature of C. Hence, the derivation from (6b) to (6c) takes place in one fell-swoop. Note that this derivation produces two separate chains, namely the A’-chain (who_i, who_k) and the A-chain (who_j, who_k). Chomsky claims that this is a good advantage of the present system, since it automatically produces well-formed chains that are distinguished in terms of the A/A’-distinction, which is necessary for the Conceptual-Intentional (C-I) Interface to provide appropriate interpretations.

1.2 Order Preservation Condition: Fox and Pesetsky (2005)
Fox and Pesetsky (2005) propose an architecture of narrow syntax that incorporates “cyclic linearization,” following the minimalist idea that computational load should be minimized as much as possible. There are two key conditions in their system that regulate cyclic linearization. One is that “the relative ordering of words is fixed at the end of each phase, or ‘Spell-out domain’.” (p. 1) The other is that “ordering established in an earlier phase may not be revised or contradicted in a later phase.” (ibid.) They express this condition as follows:

(7) Order Preservation Condition (OPC)

\[
\text{Information about linearization, once established at the end of a given Spell-out domain, is never deleted in the course of a derivation.}
\]

(p. 6)

Thus, if a later Spell-out domain includes information about linearization that contradicts what is established before, then linearization cannot function properly.

One of the most important consequences of this system is that it immediately derives the successive-cyclicity of movement. When a phrase undergoes leftward movement over some Spell-out domains, it must occupy the left-peripheral position in each domain; otherwise, contradictory information about linearization will be registered. To show this point, let us take sentence (8) for illustration.
(8) To whom will he say that Mary gave the book it?

Given that CP and vP constitute Spell-out domains, the derivation of this sentence must proceed as indicated below:

(9) \([CP_1 to whom will he [vP_1 __ say [CP_2 __ that Mary [vP_2 __ gave the book __]]]]\)

a. Spell-out domain vP2: \(to whom > gave > the book\)

b. Spell-out domain CP2: \(to whom > that > Mary > vP2\)

c. Spell-out domain vP1: \(to whom > say > CP2\)

d. Spell-out domain CP1: \(to whom > will > he > vP1\)

In the Spell-out domain vP2, \(to whom\) must be fronted to the left-peripheral position of vP2, so that the ordering of words is registered as in (9a). Notice that if such fronting did not take place, \(to whom\) would be registered as following the words \(gave-the-book\) in this Spell-out domain, and once it is moved out of this domain, it would be doomed to produce contradictory information about word ordering: \(to whom\) should precede any word in vP2. In this way, \(to whom\) must be fronted to the left-peripheral position in each Spell-out domain, as indicated in (9), hence being forced to move successive-cyclically. To the extent that this system of cyclic linearization gives rise to good consequences, as Fox and Pesetsky argue that it does, this way of deriving successive-cyclicity of movement is a strong alternative to the way the Phase-Impenetrability Condition (PIC), first proposed by Chomsky (2000), derives it.

2 Account of That-t Effects

We are now in a position to analyze that-t effects under Chomsky’s (2008) probe-goal system plus Fox and Pesetsky’s (2005) cyclic linearization mechanism. Recall first that we adopted (2), repeated below, as the characterization of the EPP.

(10) The EPP feature of T must be morpho-phonologically materialized.
Here T can be materialized by either manifesting itself with rich agreement morphology or having its specifier occupied by an *overt* phrase. Let us concentrate for the moment on such a non-pro-drop language as English and consider how such a language satisfies the EPP via the latter way. A question immediately arises as to how the EPP is satisfied in those cases that involve extraction of subject, since superficially there is no overt element occupying the Spec-TP that was passed by the moved subject. I assume that (10) can be satisfied derivationally. Further, I depart from the standard assumption that a chain is produced in terms of Copy, (Internal) Merge and Delete, but rather suppose, following Holmberg (2000) and Abe (2002), that when movement of an element α takes place, only relevant features of α are moved. Thus, according to this theory, overt and covert movements are distinguished by whether the [PF] feature of a chain is located at its head or tail.

With these assumptions in mind, let us consider the derivation of (1a), a case of *that-t effects*, which is repeated below:

(11) *Who do you think that left?

According to the present assumptions, the embedded CP phase of (11) has the following step of derivation:

(12) a. that [TP e T [vP who[PF] [VP leave]]]

b. [CP <who> that [TP who[PF] T [vP <who> [VP leave]]]]

In this step, *who* is moved into the Spec-TP and Spec-CP simultaneously, due to the parallel operations of Agree and Move triggered by the C head as well as the T head that inherits relevant features from it, as assumed by Chomsky (2008). Given the EPP characterized in (10), the [PF] feature of this element must reside in its occurrence in the Spec-TP, as indicated in (12b). Given this, there is no way to undergo further “overt” movement from this stage of derivation: if Move applies to the occurrence of *<who>* in Spec-CP, it will not lead to the correct derivation for (11), since this
occurrence lacks the [PF] feature of who. If Move applies to the occurrence of who in Spec-TP, on the other hand, it will violate the OPC given in (7), since at the stage of derivation in (12b), which constitutes a Spell-out domain, the occurrence of who in Spec-TP is linearly ordered after the complementizer that, so that movement of this occurrence of who out of this Spell-out domain is doomed to contradiction in the linear order statement. This explains why (11) cannot be legitimately derived. Furthermore, the present system immediately explains the grammaticality of sentence (1b), which is repeated below:

(13) Who do you think left?

The derivation of this sentence proceeds in exactly the same way as in (12), except that the embedded complementizer is null in this case, as indicated below:

(14) a. $\phi [_{TP} e \ T [_{IP} \ phi[PF] [_{VP} leave]]]

    b. $[_{CP} <who> \phi [_{TP} \ phi[PF] \ T [_{IP} <who> [_{VP} leave]]]]$

Since the occurrence of who in Spec-TP is located leftmost among overt elements in the CP in (14b), movement of this occurrence out of this Spell-out domain will not violate the OPC. In this way, (13) can be derived without violating the EPP or the OPC.

3 Some Consequences

3.1 Complementizer-t Effects

The present account of that-t effects also accommodates so-called complementizer-t effects, which express a generalization that subsumes that-t effects as a subcase among other cases such as the following:

(15) *Who were you wondering whether/if t lost the notebook?

(16) *Who would it be instructive for t to emulate the teacher?

(15) illustrates a case of complementizer-t effects in which the complementizer is
realized as an interrogative head such as *whether* and *if*. Note that this sentence violates the *wh*-island condition, but comparison of this sentence in acceptability with one that involves a *wh*-object being extracted out of the *wh*-island, such as (17) below, reveals that (15) involves more than a simple violation of this island.

(17) ?What were you wondering whether/if John lost it?

(16) illustrates a case where the effects in question are induced with the complementizer *for*. The ungrammaticality of both sentences follows immediately under the present assumptions. The final outputs of the embedded C domains of these sentences will be as follows:

(18) \[ \text{CP } <\text{who}> \text{ whether/if } [\text{TP } \text{who}[\text{PF}] \text{ T } [\text{vP } <\text{who}> [\text{vp lose the notebook}]]] \]

(19) \[ \text{CP } <\text{who}> \text{ for } [\text{TP } \text{who}[\text{PF}] \text{ to } [\text{vP } <\text{who}> [\text{vp emulate the teacher}]]] \]

From these stages of derivations, the occurrence of *who* in Spec-TP, which carries its [PF] feature, cannot undergo further movement without violating the OPC, since in these cases, the complementizers are non-null, which will thus give rise to a contradiction in the linear order statement.

What forces the [PF] feature of *who* in (18) and (19) to reside in its occurrence in Spec-TP is the EPP, but in the case of *for*-to infinitival clauses, it is not as obvious as in tensed clauses whether the EPP actually operates on Spec-TP. However, there is another way to guarantee that the [PF] feature of *who* must be carried by its occurrence in Spec-TP:

(20) Case checking of a relevant head must be done with an element carrying a [PF] feature.

Given that the accusative Case is checked between the complementizer *for* and a phrase in the Spec-TP just below it, it follows from (20) that in (19) the occurrence of *who* in Spec-TP must carry its [PF] feature. I argue in the following subsection that this latter way is in fact the correct one rather than the one based upon the EPP.
Sobin (1987) observes that such a *that*-t sentence as (11), repeated below, shows significant variability of acceptability among English native speakers, whereas no such variability is observed with such a complementizer-*t* sentence as (15), which is also repeated below:

(21) (*) Who do you think that left?
(22) *Who were you wondering whether/if *t* lost the notebook?

One way to accommodate this difference under the present system is to capitalize on the difference between the two complementizers *that* and *if* with respect to their semantic content. Given that the complementizer *that* is void of semantic content, it will not be unnatural to assume that such a complementizer can be inserted in the phonological component as a variant of the null complementizer. If an English native speaker has this option, then the derivation of such a *that*-t case as (21) can proceed exactly in the same way as its counterpart without *that* in narrow syntax, and hence he/she judges (21) as acceptable as the one without *that*. Such an option is uniformly unavailable among native speakers for the complementizer *if*, since it has semantic content, hence accounting for the non-variability of judgment in such a case as (22).

Let us now consider such a *for*-t case as (16), repeated below:

(23) *Who would it be instructive for *t* to emulate the teacher?

Given that this case does not show such variability in judgment as observed with *that*-t effects, it must be that the option of inserting the complementizer *for* in the phonological component is uniformly unavailable among native speakers. Since this complementizer is no more semantically contentful than *that*, there must be another reason for the unavailability of the option in question. What is relevant here is obviously Case checking: if *for* was not inserted in narrow syntax, the subject of the infinitival clause headed by this complementizer could not be Case-checked.
3.2 Suspension of That-t Effects

Mizuguchi (2008) also claims that satisfaction of the EPP-feature is responsible for that-t effects, and provides empirical consequences of his analysis. Though I will not discuss his analysis of that-t effects here, my analysis shares with his the prediction that if there is a way of satisfying the EPP other than by way of moving a wh-subject to the embedded Spec-TP in a typical that-t configuration, then no such effects arise.

First, he points out that the fact, originally observed by Perlmutter (1971), that pro-drop languages such as Italian and Spanish do not exhibit that-trace effects, as illustrated in (24) and (25) below, follows under the characterization of the EPP proposed by Alexiadou and Anagnostopoulou (1998).

(24) Italian

Chi, credi [CP che ti partira]?

who you-think that will-leave

‘Who do you think will leave?’

(25) Spanish

Quién, dijiste [CP que ti salito temprano]?

who you-said that left early

‘Who did you say left early?’

Under the present system, this fact follows in a similar way: in these pro-drop languages, the EPP feature of T is satisfied by way of T’s rich agreement morphology, so that the embedded C domain of (24), for instance, may have the following representation:

(26) [CP chi[PF] che [TP <chi> T [v <chi> [VP partira]]]]

In this derivation, the [PF] feature of chi can be carried by its occurrence in Spec-CP, since the EPP is satisfied by T’s agreement morphology, hence not requiring an overt phrase in Spec-TP. This enables chi to undergo further overt movement without
violating the OPC.

The same logic holds for such a case where an overt phrase other than a wh-subject occupies Spec-TP in a that-t configuration, so that the wh-subject is freed from satisfying the EPP. Mizuguchi (2008) notes that in a variety of languages such as Danish, Swedish and Yiddish, that-t effects can be evaded by insertion of an overt expletive or a resumptive pronoun in Spec-TP. The following examples from Yiddish demonstrate this:

(27) a. *Verı hot er moyre [CP az [TP vet tı kumen]]?
   who has he fear that will come

   b. Verı hot er moyre [CP [TP vet tı kumen]]?
   who has he fear will come

   c. ?Verı hot er moyre [CP az [TP es vet tı kumen]]?
   who has he fear that Expl will come (Diesing 1990, p. 75)

(27a) illustrates a typical case of that-t effects, and (27b) shows that such an effect goes away when the complementizer az is omitted. (27c) is a case where such an effect is circumvented by insertion of the expletive es. This follows under the present assumptions, since es satisfies the EPP and hence this allows the wh-subject ver to move to the embedded Spec-CP, carrying its [PF] feature.

The present analysis can also accommodate the so-called adverb effect in the that-t configuration, as illustrated below:

(28) Yiddish:

Verı hot er moyre [CP az [TP haynt vet tı kumen]]?
who has he fear that today will come (Diesing 1988, p. 138)

(29) a. Whoı did she say [that tomorrow tı would regret his words]? 

b. Which doctorı, did you tell me [that during an operation tı had had a heart attack]? (Bresnan 1977, p. 194)
Holmberg (2000) suggests that the adverb effect arises due to satisfaction of the EPP by adverbs. If we follow this line, the derivation of the embedded CP phase of (29a), for instance, will proceed as follows:

(30) a.  C \[TP e T [vP who[P] [VP would regret his words]]\]
   b.  C \[TP tomorrow T [vP who[P] [VP would regret his words]]\]
   c.  CP who[P] C \[TP tomorrow T [\langle who \rangle [VP would regret his words]]\]

In this derivation, the adverb \textit{tomorrow} satisfies the EPP, as in (30b), so that \textit{who} does not need to occupy Spec-TP. This then allows \textit{who} in Spec-CP to carry its [PF] feature, as in (30c), and to undergo further overt movement. The same explanation carries over to such a case where a preposed phrase satisfies the EPP, as shown below:

(31) Yiddish:
\textit{Ver, hot er nit gevolt [CP az [TP ot di bikher zol ti leyenen tj]]?}
\textit{who has he not wanted that the books should read} \quad (Diesing 1990, p. 75)

(32) a.  Robin met the man who Leslie said that [to KIM] \textit{t had given the money}.
   b.  I asked who you had claimed that [on the TABLE] \textit{t had put the book}.
   \quad (Culicover 1993, p. 98)

(33) a.  *a man who I think that \textit{t} knows this book very well
   b.  a man who I think that, this book, \textit{t} knows \textit{t} very well \quad (Ishii 2004, p. 203)

On the assumption that the preposed phrases in the embedded clauses in (31)-(33) in fact move to the embedded Spec-TP to satisfy the EPP, the \textit{wh}-subjects are freed from satisfaction of the EPP, so that they can carry their [PF] features in the embedded Spec-CP, hence able to undergo further overt movement without violating the OPC.

One may raise the question of what will go wrong if an adverb or a preposed phrase satisfies the EPP and subject stays in situ in such sentences as follows:
This can be attributed to the fact that even though the subject John is probed by T, thereby entering into an Agree relation to it, it does not undergo Move. Given Chomsky’s (2008) conception that only phase heads can undergo relevant operations, it is natural to assume that probing by T after inheritance of relevant features is somehow tied up with probing by the C just above it, so that these two operations of probing as a whole are subject to a condition like the following:  

(35) Probing by C-T triggers pied-piping.

This condition excludes the derivations that lead to the sentences in (34), since even though John is probed by C-T, it is not pied-piped to Spec-TP. In the grammatical cases in (28)-(29) and (31)-(33), on the other hand, the wh-subject is probed by C-T and it is pied-piped to the Spec of the C that probed it, though the EPP imposed upon the Spec-TP is satisfied by another phrase.

The adverb effect observed above also occurs when the complementier-t configuration involves a complementizer other than that, as demonstrated below:

(36) This is a person who you might well wonder whether/if *(under some circumstances) t would dislike you.  

(Culicover 1993, p. 103)

This is immediately explained under the present assumptions in exactly the same way as those cases that show the adverb effect with the complementizer that: in this case as well, an adverb like under some circumstances in (36) can satisfy the EPP, which thus enables a wh-subject like who in (36) to raise into the Spec-CP carrying its [PF] feature.

Interestingly, the adverb effect is not observed with the for-t configuration:

(37) a. *Who were you hoping for t to stay?

b. *Who were you hoping for under any circumstances t to stay?
This is unexpected if for-t effects arise for the same reason as that-t effects, namely, due to the EPP’s requirement that it be satisfied by an overt phrase in Spec-TP. Recall, however, that I suggested in the previous subsection that there is another way to derive for-t effects in terms of Case requirement, on the assumption that the EPP is not operative in the for-to clause. The relevant condition is repeated below:

(38) Case checking of a relevant head must be done with an element carrying a [PF]

feature.

This takes care of the ungrammaticality of a sentence like (37a), since this Case requirement forces who to carry its [PF] feature in the embedded Spec-TP and hence when it undergoes further movement, the OPC is violated (who follows the complementizer for in the Spell-out domain in question and in later Spell-out domains, the order between them is reversed). The situation will not be changed if an adverb like under any circumstances is inserted into the embedded Spec-TP, as shown in (37b), since the Case requirement given in (38) will not be affected by such an occurrence. Hence, the fact that the adverb effect is not observed with the for-t configuration lends support to the position that for-t effects have nothing to do with the EPP but rather with a Case requirement like (38).

3.3 Suspension of That-t Effects: Deriving from Optionality of Feature Inheritance

The present account of that-t effects also shares some crucial properties with such works as Rizzi (2006) and Rizzi and Shlonsky (2007). Rizzi (2006) proposes a condition called Criterial Freezing, which does a job quite similar to our characterization of the EPP given in (10): if their EPP requirement, called Subject Criterion, is satisfied by an element in the Spec of Sub(ject), this element cannot undergo further movement due to the Criterial Freezing. Given that the Subject
Criterion is normally satisfied by a subject, it follows that once it satisfies this criterion, a subject cannot undergo further movement. Rizzi (2006) and Rizzi and Shlonsky (2007) claim that that-t effects arise from such a situation. At the same time, this system allows an escape exactly like the one we discussed in the preceding subsection: if there is another element that could satisfy the Subject Criterion, then subject extraction is freed. This gives rise to suspension of that-t effects.

Rizzi and Shlonsky (2007) try to account for the contrast given in (1), repeated below, on the basis of the que-qui rule that applies to subject extraction in French, as illustrated in (40):

(39) a. *Who do you think that left?
    b. Who do you think left?

(40) a. Quelle étudiante crois-tu [qui/*que t va partir]?
    which student believe-you that will leave
    ‘Which student do you believe is going to leave?’
    b. Quelle étudiante crois-tu [*qui/que Marie va aider t]?
    which student believe-you that will help
    ‘Which student do you believe Marie is going to help?’

When object is extracted long-distance, the embedded complementizer comes out as que, as shown in (40b), whereas it comes out as qui when subject extraction is involved, as shown in (40a). Adopting Taraldsen’s (2001) proposal that the form qui is analyzed as que + -i, where -i is an expletive-like element, Rizzi and Shlonsky claim that the acceptability of (40a) with qui as its embedded complementizer follows, since here the Subject Criterion operating in the embedded Spec of SubP is satisfied by the expletive-like element -i, so that the wh-subject quelle étudiante may be extracted out of the embedded clause without violating the Criterial Freezing. They extend this analysis to accommodate the contrast between (39a) and (39b) roughly in
the following way: When the null complementizer is involved, as in (39b), it feeds an unpronounced expletive-like element analogous to French -i, which thus functions to satisfy the Subject Criterion, thereby allowing the wh-subject who to be extracted out of the embedded clause. On the other hand, the that-complementizer bleeds the occurrence of such a silent expletive-like element, hence giving rise to the situation in which the embedded wh-subject who in (39a) needs to satisfy that criterion, hence prohibited from further movement by the Criterial Freezing.

Under our system, we can incorporate Rizzi and Shlonsky’s analysis of the que-qui phenomenon in a straightforward way: since the expletive-like element -i can satisfy the EPP feature of the embedded T, the wh-subject who can move to the embedded CP-Spec, carrying its [PF] feature, which thus allows further overt movement of who. However, the extension of this analysis to that-t effects, as shown in (39) is dubious, since no morpho-phonological manifestation is involved in the satisfaction of the EPP feature of the embedded T. Such a move may give rise to circularity in the account involved: since subject extraction is possible in a given construction, there must be an expletive-like element, overt or covert. Furthermore, from the standpoint of language acquisition, it seems quite unlikely that a child comes to know without independent clues that the null complementizer can feed such an unpronounced expletive whereas the that-complementizer cannot. Thus, it is quite reasonable to assume that such a genetically wired-in mechanism as was proposed above with Chomsky’s (2008) probe-goal system and the mechanism of cyclic Spell-Out works for the account for such a contrast as in (39).

Furthermore, it is not immediately clear whether the que-qui phenomenon just discussed above should be accounted for in terms of expletive-like elements rather than in terms of complementizer agreement, as proposed by Rizzi (1990). Mayr (2010) argues that the absence of the complementizer-t effect in Barvarian has
something to do with the complementizer agreement manifested in this language.\textsuperscript{6} Mayr provides the following pair of data:

\begin{enumerate}
\item[(41) a.] $[\text{Es Kinda}, \text{hot da Hauns gfrogt } [t_i \text{ ob-s } t_i \text{ hamkummts}]$
  \begin{align*}
  \text{your children has the John asked if home-come}
  \end{align*}
  \begin{quote}
  ‘lit. Your children, John asked if $t_i$ will come home.’
  \end{quote}

\item[(41) b.] $[^*\text{Es Kinda}, \text{hot da Hauns gfrogt } [t_i \text{ ob-∅ } t_i \text{ hamkummts}]$
  \begin{align*}
  \text{your children has the John asked if home-come}
  \end{align*}
\end{enumerate}

In (41a), the embedded complementizer $\text{ob-s}$ shows agreement morphology and this allows subject extraction via topicalization. In (41b), on the other hand, the embedded complementizer $\text{ob}$ does not show such an agreement morphology and this prohibits subject extraction. Given that the suffix -s attached to $\text{ob}$ is clearly a manifestation of agreement rather than a manifestation of an expletive-like element, there is no obvious way under Rizzi and Shlonsky’s (2007) to capture such a contrast as given in (41).

Under our system, on the other hand, there is a natural way to accommodate such a contrast along the lines of Rizzi (1990), which is suggested by a reviewer: “T might not inherit the EPP property from C, in which case this EPP property would have to be ‘morpho-phonologically materialized’ in the C-domain rather than the T-domain.” Suppose that such a language as Barvarian which shows agreement morphology in C has the option of sharing $\phi$-features of C with T just below it rather than handing down such features (note that Barvarian shows agreement morphology even on T). When such feature sharing takes place, the C involved shows overt manifestation of agreement morphology, as in (41a). Given that the EPP-feature is contingent on $\phi$-features regarding whether it is inherited from C to T, it is not unnatural to assume that in the case of feature sharing, the EPP-feature can stay in C or be inherited to T. If the former option is selected, then (41a) can have the following steps of derivation
in the embedded C-domain:

(42) a. C[\phi][EPP] [_{TP} T[ ] [_{iP} your children come-home]]

b. C[\phi][EPP] [_{TP} T[\phi] [_{iP} your children come-home]]

c. [_{CP} your children[PF] C[\phi][EPP] [_{TP} <your children_j>T[\phi]]

[_{iP} <your children_k> come-home]]]

In (42b), feature sharing takes place and the EPP-feature stays in C. Then the embedded subject your children undergoes movement to Spec-TP as well as Spec-CP at the same time via parallel probing, as shown in (42c). Since the EPP-feature stays in C, the occurrence of your children in Spec-CP must carry its [PF] feature to satisfy the EPP requirement of being morpho-phonologically materialized. Thus, this occurrence of your children can undergo further movement successfully.

There is a possibility of extending the above analysis so as to accommodate what may be called Mizuguchi’s (2008) generalization, according to which T-to-C movement suppresses that-t effects. It is standardly claimed that such a language as Icelandic shows verb second (V2) configuration not only in matrix clauses but also in embedded clauses. Given that V2 holds even in the presence of a complementizer in this language, Mizuguchi (2008) claims that “it is reasonable to assume that CP is layered, with the overt complementizer being in a higher CP and a V2ed phrase being in the Spec of a lower null C head,” (p. 78) as schematically shown below:

(43) [_{CP} Spec C-að [_{CP} [V2ed phrase] C [_{TP} Spec T [_{iP} ... ]]]]

Given this structure, Mizuguchi goes on to claim that the fact that Icelandic shows no that-t effects, as shown below, follows, since the movement of V to the lower C through T is able to satisfy the EPP-feature of T.

(44) Hver, sagðir þú að tí hefði borðað petta epli?

who said you that had eaten this apple

‘Who did you say that had eaten this apple?’
It is not immediately clear, however, why such a head movement suffices to satisfy the EPP-feature. Our system provides a reasonable way of making sense of Mizuguchi’s generalization. Goto (2010) considers the relationship between T-to-C movement and C-to-T feature inheritance and reaches a quite natural conclusion:

(45) C-to-T feature inheritance does not take place when T-to-C movement does.

Given this, the lower C in (43) carries the EPP-feature as well as $\phi$-features without passing them down to T. Furthermore, given a CP recursion structure as in (43), a question arises regarding which CP constitutes a Spell-out domain. Though I have no independent motivation or evidence, let us suppose that the lower CP constitutes a Spell-out domain (probably, on top of the higher CP). Then, the lower CP of (43) will have the following schematic representation:

(46) $[\text{CP} \ldots [\text{CP who}[\text{PF}] \text{C} [\text{TP} \ldots \text{T} [\text{iP} \text{who} \ldots ]]]]$ 

Here, the occurrence of $\text{who}$ in Spec-CP must carry its [PF] feature to satisfy the EPP. From this Spell-out domain, this occurrence is able to undergo further movement without violating the OPC, since it is located leftmost among the overt elements in this Spell-out domain. This is how a $\text{wh}$-subject is extracted out of the embedded CP that involves T-to-C movement in layered CPs with an overt complementizer.\textsuperscript{7} Note again that there is no obvious way to deal with Mizuguchi’s generalization under Rizzi and Shlonsky’s (2007) system.

To sum up, the present system can capture the correlation between the absence of complementizer-$t$ effects and the occurrence of complementizer agreement or T-to-C movement in quite a natural fashion, unlike Rizzi and Shlonsky’s (2007) system. In this respect, it can be regarded as a more promising way to capture complementizer-$t$ effects in a more general way, with more empirical coverage.
3.4 No That-t Effects in Head-Final Languages

One more consequence of the present account of complementizer-\textit{t} effects comes from the following prediction it makes: no such effects arise in head-final languages. This is because in such languages, complementizers appear to the right of the clauses they introduce and hence when subject is extracted out of a CP domain, the relevant configuration may be something like the following:

\[(47) \ [\text{CP} \ <\text{who}> \ [\text{TP} \ <\text{who}> \ [\text{TP} \ <\text{who}> \ [\text{VP} \ <\text{who}> \ [\text{VP} \ <\text{who}> \ [\text{TP} \ C]]]]] \]

In this configuration, \textit{who[P]} satisfies the EPP in Spec-TP. It can then move out of this domain without violating the OPC, since in (47), it is located leftmost among the overt elements, irrespective of whether the complementizer is overt or not.

Ishii (2004) demonstrates that Japanese, a head-final language, does not exhibit \textit{that-t} effects, which thus verifies that the present prediction is correct. He exploits comparative constructions to make his point, but as mentioned in the next final section, the present account of \textit{that-t} effects is not clear about how to deal with such effects occurring in those constructions that are claimed to involve empty operators. For this reason, I present a different kind of Japanese data to show that no \textit{that-t} effects arise in this language. This is concerned with subject raising constructions. First of all, it has been standardly observed that a DP cannot be raised out of a finite clause, as illustrated by the following English example:

\[(48) \ *\text{John seems that t is honest.}\]

The ungrammaticality of this sentence could be accounted for in terms of the present account of \textit{that-t} effects. The relevant configuration of the embedded CP domain of this sentence will be as follows:

\[(49) \ [\text{CP} \ <\text{that}> \ [\text{TP} \ <\text{John[P]} > \ [\text{TP} \ <\text{John}> \ [\text{VP} \ <\text{John}> \ [\text{VP} \ <\text{John}> \ [\text{TP} \ C]]]]] \]

From this stage, \textit{John} cannot be moved out of this Spell-out domain without violating the OPC, since it is registered as following the complementizer \textit{that} in the linear order
statement in that Spell-out domain and this ordering is reversed in the later Spell-out domains. This is not the end of the story, however, since omission of that in (48) does not improve the sentence, as shown below:

(50) *John seems t is honest.

We thus need to rely on another constraint to rule out (50), which is likely to rule out (48) as well; the standard claim is that there is no trigger to attract or probe John once the latter checks its nominative Case feature.

Note that if a language allows a DP to undergo raising out of a finite clause with an overt complementizer, so that a sentence like (48) is grammatical, then this language is regarded as showing no that-t effects. According to Uchibori (2000, 2001), Japanese is such a language. She demonstrates that such sentences as the following are cases of raising out of a finite clause in Japanese:


-NOM recently more study Comp happen-Past

‘It has happened recently that John studies harder.’

b. [Siraha-no ya-ga], kinoo yatto [ti tekisetuna koohosya-ni white-feather-GEN arrow-NOM yesterday finally appropriate candidate-DAT tatu yooni] nat-ta.

stand Comp happen-Past

‘Yesterday it finally happened that an appropriate candidate was nominated as a natural consequence of the situation.’

Uchibori (2000, 2001) argues that the main predicate nar ‘happen’ takes subjunctive CP with yooni functioning as its complementizer, and that in such a sentence as (51a), John is raised from the embedded subject position to the matrix subject position. This raising analysis is confirmed by such a sentence as (51b), which involves an idiom chunk; in this sentence, the raised subject constitutes part of the idiom chunk
\textit{siraha-no ya-ga tatu} ‘white-feather-GEN arrow-NOM stand’, meaning that somebody is chosen for a nomination. If this raising analysis is correct, then it lends support to the claim that no complementizer-\textit{t} effects arise in Japanese, thereby verifying the prediction made by the present account of such effects.

4 Concluding Remarks and Some Speculations

In this paper, I proposed an account of complementizer-\textit{t} effects in terms of the EPP requirement under Chomsky’s (2008) probe-goal system, thereby supporting the position that the EPP should incorporate a condition required by the PF interface, namely one to the effect that the EPP must be satisfied by overt material. The present account makes crucial use of the mechanism of parallel operations proposed by Chomsky (2008) that take place in the C- and T-domains. Further, Fox and Pesetsky’s (2005) mechanism of linear ordering plays an essential role in this account. To the extent that the present account of complementizer-\textit{t} effects is successful, it will lend support to these mechanisms.

Finally, I briefly address a remaining question, only providing speculations. Bresnan (1977) observes that \textit{that-\textit{t}} effects arise even in those constructions that lack overt \textit{wh}-phrases, as shown below:

\begin{enumerate}[(52)]
\item \textit{Relative Clauses}
\begin{itemize}
\item the woman that the committee predicts (*that) \textit{t} will win the election
\end{itemize}
\item \textit{Clefts}
\begin{itemize}
\item It is her Alfa that she told us (*that) \textit{t} was stolen.
\end{itemize}
\item \textit{Comparatives}
\begin{itemize}
\item I solved more problems than I’d predicted (*that) \textit{t} would be solved by all of us.
\end{itemize}
\end{enumerate}
is not consonant with this assumption for two reasons: one is that empty operator will not satisfy the EPP and the other is that the OPC will not impose any restriction upon empty operator movement, the reason for both being simply that such an operator lacks phonetic content. Thus, it needs to adopt a more traditional analysis a la Chomsky (1977) according to which deletion of *wh*-phrases is involved in such constructions as in (52)-(54).  

Building on the assumption that the EPP must be satisfied by an overt element in Spec-TP, Takahashi (2001) claims that an empty operator in fact cannot satisfy this condition, thus accounting for the ungrammaticality of the following sentences:

(55) a. *John is easy to expect _ will see Mary. 
   b. *?John is easy to believe _ to know Mary well.

Given that the *easy*-construction involves empty operator movement inside the *to*-infinitival clause, the ungrammaticality of the above sentences follows as a violation of the EPP. Parasitic gap constructions show the same behavior, as shown below:

(56) a. *Someone who John expected t would be successful though believing that e is incompetent.  
   b. *?Someone who John expected t would be successful though believing e is incompetent. (Chomsky 1982, p. 53)

While the ungrammaticality of (56a) may be taken to be due to *that-t* effects, omission of the complementizer *that* does not improve the sentence much, as shown in (56b). This suggests that something else must be involved that causes ungrammaticality. The most natural account in the present context is to rely on the empty operator movement analysis of parasitic gap constructions, proposed by Chomsky (1986). Given this assumption, the sentences in (56) are ruled out as a violation of the EPP, since an empty operator cannot satisfy this condition in the
parasitic gap position indicated with $e$.\(^9\)

In this light, whether the presence vs. absence of complementizers correlates with that of complementizer-$t$ effects in a given construction can be taken as a diagnostics for whether that construction involves deletion of a \textit{wh}-phrase or movement of an empty operator.

**References**

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Footnotes

1See Richards 2007 and Chomsky 2007 for relevant discussions.

2Chomsky seems to assume that a tense feature is also inherited from C to T, but I ignore this feature since it plays no role in the accounts that follow. As far as I can see, Chomsky is not clear about whether the EPP-feature is inherited from C or it comes with T from the beginning. I adopt the former without any argument here, but see Section 3.3 for supporting argument for this assumption.

3This opens up the possibility that in such a case as (14), a wh-subject does not need to stop by the embedded Spec-CP. This leads to the question whether it is possible to move a member of a chain that does not head it. If the answer is negative, then we are forced to claim that the wh-subject does not move any further than the Spec-TP in (14). At the moment, I have no argument that will favor either position and must leave this matter undecided. The present analysis of that-t effects owes an important insight to Ishii’s (2004), according to which a wh-subject, when moved out of a CP domain, does not move overtly to the Spec-CP, following the Vacuous Movement Hypothesis, hence not accessible to further movement according to the PIC.

4Strictly, (20) needs to be weakened in such a way that it holds only for those phrases that carry [PF] features, which thus makes empty operators exempt from this condition. See Section 4 for relevant discussions.

5As one reviewer correctly points out, (35), as it stands, cannot hold universally, since there are apparent cases in which only Agree applies, such as there-constructions in English and quirky subject constructions in Icelandic, in which agreement of T with a nominative phrase does not appear to trigger movement. On the other hand, it must be the case that in English, subject must undergo overt movement to Spec-TP, so that this language cannot have the VSO order, as shown
below:

(i) *Will John see Mary tomorrow.

Thus, it must be presupposed that (35) applies only to cases in which Agree somehow forces Move.

6 I am indebted to one reviewer for kindly having brought the relevant Barvarian data as well as Mayr’s (2010) work to my attention.

7 We saw in Section 3.2 that Yiddish shows that-effects, just like English, as shown in (27). However, this language is known as showing V2 effects in both main and embedded clauses, and hence it might be expected that it should be like Icelandic in exhibiting no that-effects. I follow Diesing (1990) in assuming that in Yiddish, the finite verb moves only to T rather than all the way up to C in the embedded clause. This means under the present system that the EPP feature is inherited from C to T in the embedded context, hence showing that-effects, just like English. I am indebted to a reviewer for clarifying this point.

8 Given this, it follows that relative clauses do not show that-effects when that introduces these clauses, as shown below:

(i) a. the man who came here yesterday
b. the man that came here yesterday

Under the present assumptions, (ib) can have the following representation:

(ii) the man \([CP <\text{who}> \quad \text{that} \quad [TP \quad \text{who}[PF] \quad \text{Past} \quad [VP \quad <\text{who}> \quad \text{come here yesterday}]])\]

Since no further movement is involved in a domain later than the CP domain under consideration, the OPC is irrelevant here. The surface form of (ib) is derived from (ii) by deleting who in Spec-TP. I have nothing to say about the fact that the complementizer that cannot be omitted in (ib).

9 One reviewer pointed out that it is predicted under the present assumptions that the adverb effect on the that-t phenomenon observed in Section 3.2 should also hold
for such parasitic gap constructions as in (56). This prediction is in fact borne out by the following data, provided by Culicover (1993):

(i) a. *What did you buy \( t \) after stating clearly that \( e \) could easily be made at home?

b. ?What did you buy \( t \) after stating clearly that with very little difficulty \( e \) could easily be made at home?  

(Clulicover 1993: p. 105)